

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): An inverter for converting a DC input voltage into an AC output voltage ~~using a sigma-delta modulation (SDM)~~, the inverter comprising:

(a) a sigma-delta modulation (SDM) controller for producing a modulated output voltage signal according to a reference voltage ~~signal~~; signal, wherein the SDM controller comprises:

(i) an integrator for producing an integrator output signal having an integrated output slope according to a difference between the reference voltage signal and the modulated output voltage signal;

(ii) a sample-and-hold circuit electrically connected to the integrator for sampling and holding the integrator output signal; and

(iii) a quantizer circuit electrically connected to the sample-and-hold circuit and to an input terminal of the integrator through an output terminal thereof for quantizing the integrator output signal and producing the modulated output voltage signal;

(b) a driving circuit electrically connected to ~~said~~ the SDM controller for producing a driving signal according to ~~said~~ the modulated output voltage signal; and

(c) a power inversion stage circuit electrically connected to ~~said~~ the driving circuit for producing ~~said~~ the AC output voltage according to ~~said~~ the driving signal.

Claim 2 (canceled)

3. (currently amended): The inverter according to Claim 1 ~~Claim 2~~, wherein ~~said the integrated output slope is positive when the difference between the reference voltage signal and the modulated output voltage signal is a positive value~~ ~~integrator circuit is an integrator~~.

4. (currently amended): The inverter according to Claim 1 ~~Claim 3~~, wherein ~~said the~~ integrator is a differential integrator.

5. (currently amended): The inverter according to Claim 1 ~~Claim 2~~, wherein ~~said the~~ sample-and-hold circuit is a sample-and-hold device and is controlled by an external sampling signal.

6. (currently amended): The inverter according to Claim 1 ~~Claim 2~~, wherein ~~said the~~ quantizer circuit is a two-level quantizer.

7. (currently amended): The inverter according to Claim 6, wherein ~~said the~~ two-level quantizer is a two-level comparator.

8. (currently amended): The inverter according to Claim 1, wherein ~~said the~~ modulated output voltage signal is a pulse train.

9. (currently amended): The inverter according to Claim 1, wherein ~~said the~~ reference voltage signal is input from an external signal generator.

10. (currently amended): The inverter according to Claim 1, wherein ~~said~~ the driving circuit is a high/low side driver.

11. (currently amended): The inverter according to Claim 1, wherein ~~said~~ the power inversion stage circuit comprises:

a power stage circuit electrically connected to ~~said~~ the driving circuit for producing a AC power signal according to ~~said~~ the driving signal and ~~said~~ the DC input voltage; and

a filter circuit electrically connected to ~~said~~ the power stage circuit for producing ~~said~~ the AC output voltage according to ~~said~~ the AC power signal.

12. (currently amended): The inverter according to Claim 11, wherein ~~said~~ the power stage circuit is in a full-bridge configuration.

13. (currently amended): The inverter according to Claim 12, wherein ~~said~~ the full-bridge configuration is a an H-diagonal structure comprising four power switches.

14. (currently amended): The inverter according to Claim 13, wherein each of ~~said~~ the four power switches is a MOSFET.

15. (currently amended): The inverter according to Claim 11, wherein ~~said~~ the filter circuit is a low-pass filter.

16. (currently amended): The inverter according to Claim 11, wherein ~~said~~ the filter circuit comprises an inductor and a capacitor in series.

17. (currently amended): A controller for producing a modulated output voltage signal according to a reference voltage signal, the controller comprising:

(a) an integrator ~~circuit~~ for producing an integrator output signal having an integrated output slope according to a difference between ~~said~~ the reference voltage signal and ~~said~~ the modulated output voltage signal;

(b) a sample-and-hold circuit electrically connected to ~~said~~ the integrator ~~circuit~~ for sampling and holding ~~said~~ the integrator output signal; and

(c) a quantizer circuit electrically connected to ~~said~~ the sample-and-hold circuit and electrically connected to an input terminal of ~~said~~ the integrator ~~circuit~~ through an output terminal thereof for quantizing ~~said~~ the integrator output signal and producing ~~said~~ the modulated output voltage signal.

18. (currently amended): The controller according to Claim 17, wherein ~~said~~ the integrated output slope is positive when the difference between the reference voltage signal and the modulated output voltage signal is a positive value ~~integrator circuit is an integrator~~.

19. (currently amended): The controller according to Claim 17, wherein ~~said~~ the integrator is a differential integrator.

20. (currently amended): The controller according to Claim 17, wherein ~~said~~ the sample-and-hold circuit is a sample-and-hold device and is controlled by an external sampling signal.

21. (currently amended): The controller according to Claim 17, wherein ~~said~~ the quantizer circuit is a two-level quantizer.

22. (currently amended): The controller according to Claim 21, wherein ~~said~~ the two-level quantizer is a two-level comparator.

23. (currently amended): The controller according to Claim 17, wherein ~~said~~ the modulated output voltage signal is a pulse train.

24. (currently amended): The controller according to Claim 17, wherein ~~said~~ the reference voltage signal is input from an external signal generator.

25. (currently amended): The controller according to Claim 17, wherein ~~said~~ the controller is a sigma-delta modulation (SDM) ~~SDM~~ controller.

26. (new): The controller according to Claim 17, wherein the integrated output slope is negative when the difference between the reference voltage signal and the modulated output voltage signal is a negative value.

27. (new): The inverter according to Claim 1, wherein the integrated output slope is negative when the difference between the reference voltage signal and the modulated output voltage signal is a negative value.

28. (new): In an inverter for converting a DC input voltage into an AC output voltage, a sigma-delta modulation (SDM) controller for producing a modulated output voltage signal according to a reference voltage signal, the SDM controller comprising:

(a) an integrator for producing an integrator output signal having an integrated output slope according to a difference between the reference voltage signal and the modulated output voltage signal;

(b) a sample-and-hold circuit electrically connected to the integrator for sampling and holding the integrator output signal; and

(c) a quantizer circuit electrically connected to the sample-and-hold circuit and to an input terminal of the integrator through an output terminal thereof for quantizing the integrator output signal and producing the modulated output voltage signal.